National Institute of Environmental Health Sciences

The 2003 heat wave in France: Hydratation status changes in older inpatients

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Abstract:

Little is known about the impact of behavioral changes after the 2003 heat wave on hydration status of elderly citizens in France. We used an administrative data file provided information about 23,022 inpatients aged > or Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)70 years admitted between 2000 and 2006, including vital status at discharge and Charlson comorbidity index and matched it with the result of five blood tests (sodium, potassium, glucose, urea nitrogen, creatinine) within the first 24 h after admission and with daily temperatures before admission. We then measured the prevalence of plasma tonicity (PT) 300 mOsm/l, blood urea nitrogen/creatinine ratio (BUNC) >100 and inhospital mortality. In 2000-2002, 2003, 2004-2006, prevalence (%) was, respectively 7.5, 8.0, 9.5 (P < 0.0001) for PT < 275 mMol/l, 8.4, 10.4, 7.2 (P < 0.0001) for PT > 300 mOsm/l, and 35.4, 30.7, 26.7 (P < 0.0001) for BUNC > 100. Inhospital mortality rate was 10.8, 10.8 and 9.0%, respectively (P < 0.0001). After adjustment for covariates, OR (95% CI) in 2004-2006 with reference to 2000-2002 was 1.26 (1.13-1.39) for PT < 275 mMol/l, 0.85 (0.76-0.94) for PT > 300 mOsm/l, and 0.65 (0.61-0.69) for BUNC > 100. Inhospital mortality risk associated with hydration disorders did not vary significantly over periods for PT < 275 mMol/l (HR 1.06 to 1.40) and PT > 300 mOsm/l (HR 1.76 to 1.96) but was lower for BUNC > 100 in 2003 (HR 1.27) than in 2000-2002 (HR 1.64) or 2004-2006 (HR 1.77) (P Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.04). So, since the 2003 heat wave, significant shifts in prevalence of intracellular hydration disorders indicate behavioral changes with positive impact on hydration status.

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Resource Description

Early Warning System: ☒

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☒

weather or climate related pathway by which climate change affects health

Temperature

Temperature: Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : France

Health Impact:

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type:

format or standard characteristic of resource

Research Article

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale:

time period studied

Time Scale Unspecified